

FLY ASH ANALYSIS

Report To: Ash Grove Resources, L.L.C. **Date:** 07/01/2010

Laboratory No.: NBCCOMP9-10 **Date Received:** 05/13/2010

Sample Identification: Nebraska City Power Plant

CHEMICAL COMPOSITION (mass %):	ASTM C 618-08 Criteria	
	<u>Class F</u>	<u>Class C</u>
Silicon Oxide (SiO ₂)	33.2	
Aluminum Oxide (Al ₂ O ₃)	18.6	
Iron Oxide (Fe ₂ O ₃ (T))	5.9	
SUM (SiO ₂ +Al ₂ O ₃ +Fe ₂ O ₃ (T))	57.770.0 min.50.0 min.
Sulfur Trioxide (SO ₃)	3.35.0 max.5.0 max.
Calcium Oxide (CaO)	27.7	
Magnesium Oxide (MgO)	5.2	
Moisture Content	0.23.0 max.3.0 max.
Loss on Ignition	0.66.0 max.6.0 max.

PHYSICAL TEST RESULTS:

Fineness		
Retained on a 45-µm sieve, (%)	10.334 max.34 max.
Strength Activity Index		
With Portland Cement, (%)		
Ratio to Control @ 28 days	10475 min.75 min.
Ratio to Control @ 7 days	9575 min.75 min.
Water Requirement, (% of Control)	95105 max.105 max.
Soundness		
Autoclave Expansion, (%)	0.040.8 max.0.8 max.
Density (grams per cubic cm)	2.61	

REMARKS:

9th composite sample for 2010; represents ash from 04/26 through 05/07/2010.
7-day Paste Strength: 280 psi
Setting Time: 80 minutes

Materials Analysis & Research Laboratory - Participants in the Cement & Concrete Reference Laboratory pozzolan testing program.

Analysis Approved:



Dr. Scott Schlorholtz, Scientist - MARL